

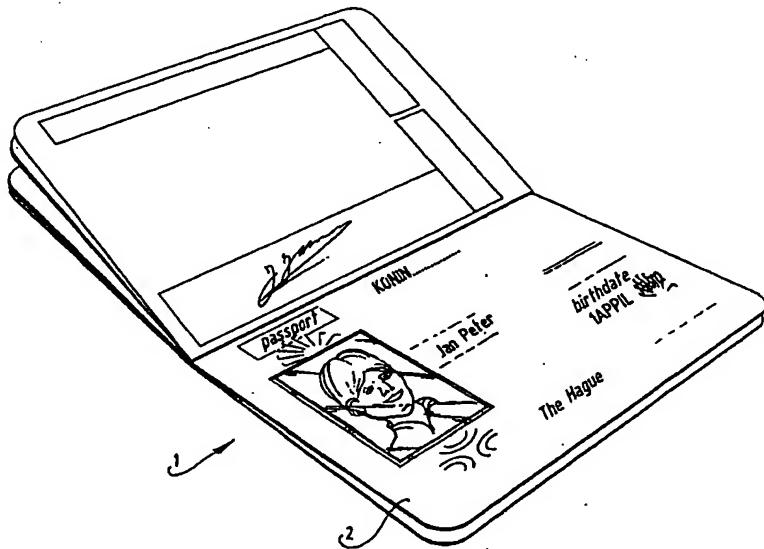
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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: DOCUMENT MADE FRAUD-PROOF BY AN IRREVERSIBLY DISTORTABLE WEAKENING PATTERN



## (57) Abstract

The invention relates to a fraud-proof document comprising a carrier and at least one marking arranged on the carrier, wherein in at least a part of the surface of the marking or along at least a part of the periphery of the marking a weakening pattern is arranged in the carrier which, when detached, results in a permanent and easily visible distortion of the pattern. When removing the glued-on passport photo or foil a forger will irrevocably distort the weakening pattern, this such that the regularity is permanently and visibly disturbed so that it is easy to ascertain that the document in question has been subjected to an attempted fraud.

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**DOCUMENT MADE FRAUD-PROOF BY AN IRREVERSIBLY DISTORTABLE  
WEAKENING PATTERN**

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The invention relates to a fraud-proof document comprising a carrier and at least one marking arranged on the carrier.

Such documents are generally known, for 10 instance in the form of passports, driving licences, credit cards and the like.

The personalized markings can be formed by a passport photo arranged on the carrier or a marking arranged on the carrier by means of ink, for instance a 15 signature or a name printed on the carrier.

It will be apparent that when such a document falls into the hands of a forger, the forger will attempt to provide the document with different personalized markings, for instance with a different passport photo and a 20 different name, and so on. The forger will herein have to gain access to the markings originally applied to the carrier in order to remove or change them.

The object of the present invention is to provide such a fraud-proof document, wherein removal of a 25 personalized marking or attempt at removal thereof is easily visible.

This object is achieved in that in at least a part of the surface of the marking or along at least a part of the periphery of the marking a weakening pattern 30 is arranged in the carrier which, when detached, results in a permanent and easily visible distortion of the pattern.

When removing the glued-on passport photo or foil the forger will irrevocably distort the weakening 35 pattern, this such that the regularity is permanently and visibly disturbed so that it is easy to ascertain that the document in question has been subjected to an attempted fraud.

According to a preferred embodiment the weakening pattern comprises a linear weakening arranged in the material of the document and extending along at least one line.

5 This weakening will tear when violated, so that a visible and irreversible distortion occurs.

According to a second embodiment the weakening lines extend in a regular structure so that distortions of the structure are immediately visible.

10 In accordance with the now provided, most effective embodiment, the weakening extends in a rectangular or dovetail-shaped toothing.

According to another preferred embodiment the weakening extends in spiral form.

15 According to yet another preferred embodiment the weakening extends at least partly in radial lines.

According to an attractive embodiment the linear weakening is formed at least partly by a perforation.

20 A preferred embodiment relates to such a document, wherein a transparent foil is adhered to the carrier, wherein when carrier and foil are separated the weakening pattern remains adhered partly to the foil and partly to the carrier.

25 Such a measure finds application inter alia in the Dutch passport. In order to remove a marking applied to such a carrier, the forger will first have to remove the foil. Because in accordance with said embodiment of the invention the weakening pattern remains adhered

30 partly to the foil when the foil is removed, the distortion of the pattern will be permanently visible after the marking has been removed and replaced by a falsified marking and the foil returned to its position.

According to another preferred embodiment the 35 visibility of the weakening pattern is accentuated by measures in the printing which result in greater contrast differences or colour differences. This makes the distortion of the pattern even more apparent.

According to yet another preferred embodiment the document is printed and provided with at least one colour transition at the position of the weakening pattern. This makes distortion of the zone even more 5 apparent.

According to yet another preferred embodiment the weakening is arranged by a laser spot.

The present invention will be elucidated hereinbelow with reference to the annexed figures, in 10 which:

figure 1 shows a perspective view of a passport according to the present invention;

figure 2 shows a detail view of a variant of the passport illustrated in figure 1;

15 figure 3 is a perspective view of an alternative embodiment of a passport according to the invention; and

figure 4 is a perspective view of another embodiment.

20 Figure 1 shows a passport 1 provided with a personalized page 2. Personalized markings in the form of a passport photo 3 and a name 4 are arranged on the personalized page. The personalized page 2 is manufactured from a strong carrier material, usually 25 paper, in which weakening pattern 5 has already been arranged. After the page is provided with the personalized markings in the form of passport photo 3, name 4 and possible further designations, the page is provided with a self-adhesive foil which during 30 application develops a great adhesive force by means of heating.

In order to complicate removal and changing of the personalized markings two weakening patterns 5 are arranged in the carrier. These extend parallel to the 35 edges of the passport photo over the whole width of the page and are partially covered by the glued-on passport photo. The patterns are formed by perforated lines in the form of a toothing which are readily visible to the eye.

When a forger thus attempts to gain access to the personalized markings he will inevitably damage the weakening pattern when removing the foil, because parts of this pattern will adhere to the foil and other parts 5 will remain behind on the carrier. All markings on this page are protected by the extent of the patterns 5. An additional protection takes place round passport photo 3. This is in any case glued partly onto the weakening pattern, whereby the pattern is again damaged locally 10 when the passport photo is removed.

Due to the fineness of the pattern and the damage thereto it is no longer possible to re-place the elements of the pattern with any accuracy at their original position, so that the distortion is permanently 15 and conspicuously visible.

It will be apparent that this results in a high degree of security against fraud.

Various aspects are shown in more detail in figure 2. The foil 6 is moreover shown herein. The 20 perforated weakening lines extend through the whole thickness of the carrier material. In order to make the pattern easily visible, carrier material must be removed over a well visible line width. Such an operation is performed in excellent manner by means of a laser spot. 25 So as to be readily visible the weakening pattern 5 can be about 10 mm wide. The lines within this pattern have a well visible line width in the order of 0.7 mm. Pattern parts left in place between lines such as teeth, dovetails and spiral parts have the same width up to a 30 small number of times the line width. This enhances the visibility of the regularity in the pattern.

It will be apparent that it is not possible to restore such a pattern, once disturbed, to its original state.

35 It will also be apparent that applying a suitable colour on the field of the weakening pattern can visually emphasize a possible disruption of the pattern, whereby the chance of detection is increased. It is

further possible to choose an ink which displays a colour change with laser treatment and in this way enhances the visibility of the pattern.

The present embodiment relates to a perforation  
5 7. It will be apparent that it is not per se necessary for the linear weakenings extending as a toothing over the whole weakening pattern to be formed by a perforation; it is equally possible for these to be formed by a groove. Then also they are preferably  
10 arranged with a laser spot.

Instead of the shown pattern in the form of a toothing it is also possible to use other patterns, for instance a dovetail pattern as shown in figure 3.

The embodiment shown in figure 3 is  
15 distinguished from the embodiments shown in figures 1 and 2 in that the weakening pattern extends round passport photo 3. in the case of attempts to remove the foil, the weakening pattern thus provides protection against incursions from all sides.

20 The patterns in the form of a dovetail and toothing reveal much damage when foil is separated from carrier material because parts of the foil remain adhered while other parts remain connected to the carrier. This has to do with the surface area of the diverse pattern  
25 parts, the adhesive force of the foil and the strength of the remaining connections to the rest of the carrier.

The spiral-shaped pattern is particularly suitable for placing at the corner points of passport photos to be glued in. Because it is connected partly to  
30 the photo and partly to the carrier it will have to be damaged when the photo is removed. When the spiral is damaged large conspicuous holes are found to appear.

In the passport shown in figure 4 not only is the vicinity of passport photo 3 provided with weakenings  
35 according to the invention but also the date of birth 9. This is in any case also a feature that is susceptible to forgery.

Passport photo 3 is protected by a weakening pattern 10 at the bottom, which is formed by three pairs of concentric circular arcs. These thus form a regularly ordered pattern, wherein a disturbance of the pattern is 5 immediately apparent. Conversely, a pattern 11 is arranged at the top of the passport which is formed by radial weakening lines which extend through a semi-circular arc and which are provided on their distal end with tangential portions. Here too a regular pattern is formed 10 which immediately shows when tampering has occurred, for instance through an attempt to remove the passport photo.

This also applies for the date of birth 9. This is likewise printed on a weakening pattern 11.

Finally, it is pointed out that it is possible 15 to print the weakening pattern, as otherwise already shown in the case of the date of birth. This is also possible for instance in the vicinity of the passport photo so as to make attempted tampering even more easily apparent.

20 It is otherwise pointed out that the invention can also be applied when there is no laminated transparent foil. In order in that case to prevent damage to the pattern during normal use, the use of a transparent protective cover is to be recommended.

25 It will also be apparent that many other weakening patterns can be applied. Style requirements may also influence the design.

**CLAIMS**

1. Fraud-proof document comprising a carrier  
5 and at least one marking arranged on the carrier,  
**characterized in that** in at least a part of the surface  
of the marking or along at least a part of the periphery  
of the marking a weakening pattern is arranged in the  
carrier which, when detached, results in a permanent and  
10 easily visible distortion of the pattern.

2. Document as claimed in claim 1,  
**characterized in that** the weakening pattern comprises a  
linear weakening.

3. Document as claimed in claim 2,  
15 **characterized in that** the weakening lines extend in a  
regular structure so that distortions of the structure  
are immediately visible.

4. Document as claimed in claim 3,  
**characterized in that** the weakening extends in a  
20 rectangular or dovetail-shaped toothing.

5. Document as claimed in claim 3,  
**characterized in that** the weakening extends in spiral  
form.

6. Document as claimed in claim 3,  
25 **characterized in that** the weakening extends at least  
partly in radial lines.

7. Document as claimed in claim 6,  
**characterized in that** the weakening also extends in  
substantially tangential lines connected to the radial  
30 lines.

8. Document as claimed in any of the foregoing  
claims, **characterized in that** the weakening is dimen-  
sioned such that sufficient carrier material remains to  
impart sufficient firmness to the carrier during further  
35 use.

9. Document as claimed in any of the claims 2-  
8, **characterized in that** the linear weakening is formed  
at least partly by a perforation.

10. Document as claimed in any of the claims 2-  
8, **characterized in that** the linear weakening is formed  
at least partly by a groove.

11. Document as claimed in any of the foregoing  
5 claims, **characterized in that** the linear weakening is  
arranged at least partly by a laser spot.

12. Document as claimed in any of the foregoing  
claims, **characterized in that** more than one marking is  
arranged on the carrier and that the markings are provided  
10 on their collective periphery with the weakening  
pattern.

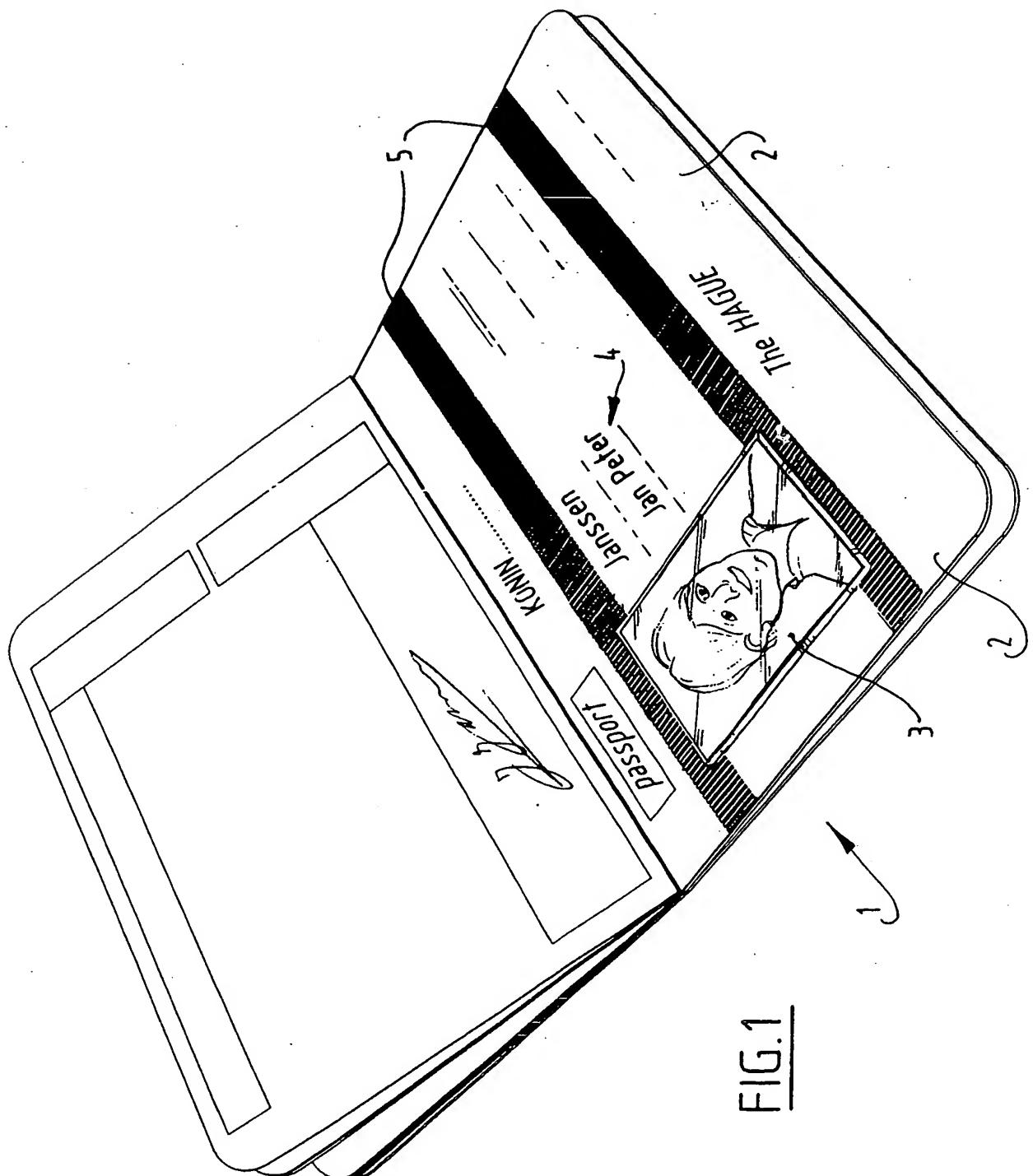
13. Document as claimed in any of the foregoing  
claims, **characterized in that** a transparent foil is  
adhered to the carrier, wherein when carrier and foil are  
15 separated the weakening pattern remains adhered partly to  
the foil and partly to the carrier.

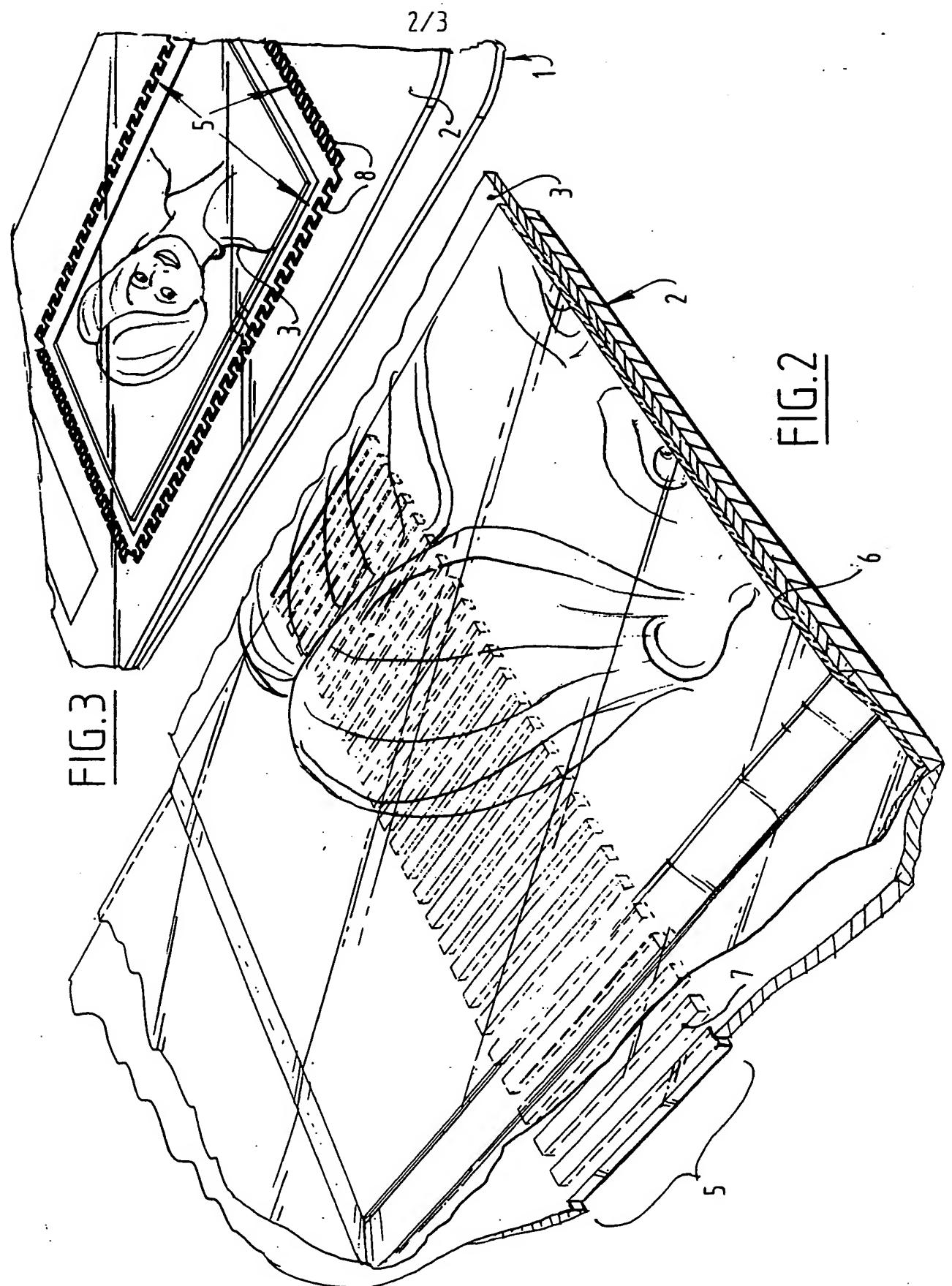
14. Document as claimed in any of the foregoing  
claims, **characterized in that** if the personalized marking  
is an object to be adhered to the carrier, such as a  
20 passport photo, a weakening pattern extends partly under  
the marking.

15. Document as claimed in any of the foregoing  
claims, **characterized in that** printing at the position of  
the weakening pattern enhances the visibility of the  
25 pattern.

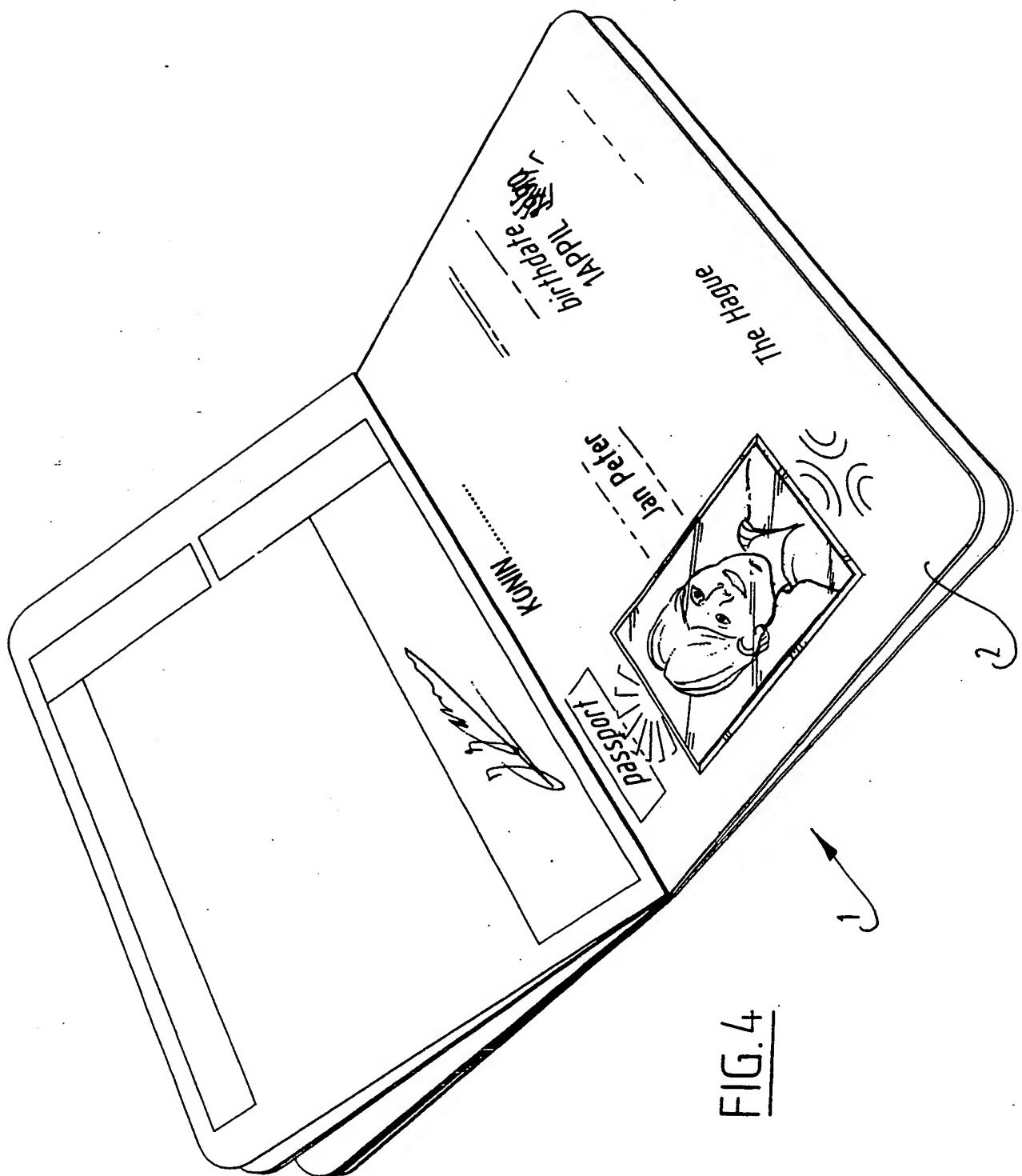
16. Document as claimed in any of the foregoing  
claims, **characterized in that** use is made for printing at  
the position of the weakening pattern of ink which reacts  
to laser action with a colour change.

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# INTERNATIONAL SEARCH REPORT

Final Application No

PCT/NL 98/00099

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 6 B42D15/10

According to International Patent Classification(IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 B42D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 626 392 A (ADVANCED CARD SYSTEMS) 28 July 1989 see the whole document	1
A	EP 0 626 275 A (DORNED B.V.) 30 November 1994 see the whole document	1
A	US 3 417 497 A (LAMINEX INDUSTRIES) 24 December 1968	
A	US 2 932 913 A (LAMINATORS INC.) 19 April 1960	

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2626392 A	28-07-1989	NONE	
EP 626275 A	30-11-1994	NL 9300888 A	16-12-1994
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